

## Claims

1. An optical system of the type having an aperture for light to pass through and designed to collect and project a substantial amount of radiant flux from a quasi point source lamp as a substantially collimated radial beam comprised of:
  - a. a quasi point source lamp located on an optical axis;
  - b. a segmented radial disk located on an optical axis, parabolic or ellipsoidal in radial section, the focal point of which is the quasi point source on the optical axis, having radial segments which are concave in the transverse section of segments; and
  - c. a segmented reflector ring surrounding the quasi point source being disposed along the optical axis with one set of ring segments disposed to collect reflected beams from the segmented radial disk and another set of ring segments disposed to collect, collimate and direct light from the quasi point source, both sets of reflectors being canted in relationship to the optical axis so that both the reflected beams and reflected direct light are projected in substantially the same radial plane away from the luminaire.

2. An optical system as defined in Claim 1 wherein at least some of the reflective segments of the ring reflectors are convex.
3. An optical system as defined in Claim 1 wherein at least some of the ring reflectors segments are concave.
4. An optical system as defined in Claim 1 wherein at least some of the ring reflective segments are flat.
5. An optical system designed to collect and project a substantial amount of radiant flux from a quasi point source lamp as a substantially collimated radial beam comprising:
  - a. a quasi point source lamp located on an optical axis;
  - b. a radial disk located on an optical axis, parabolic or ellipsoidal in radial cross-section, the focal point of which is the quasi point source on the optical axis;
  - c. a refractive ring including positive cylindrical lenses radially disposed about the optical axis refracting light rays from the quasi point source to the reflection disk;

d. a segmented reflector disk surrounding the quasi point source of which a portion of the segments are disposed to reflect and direct light received from the reflector disk and another portion of the segments disposed to reflect and direct light received from the quasi point source.

6. An optical system as defined in Claim 5 wherein the refractive ring includes collimating lens segments.

7. An optical system as defined in Claim 1 wherein a conical lens at least partially covers the aperture of the luminaire.

8. An optical system as defined in Claim 1 wherein a canted collimating ring lens is disposed around the optical axis to collimate a radial beam substantially parallel to the reflected beams.

9. An optical system as defined in Claim 8 wherein the canted collimating ring lens is comprised of individually collimating segments.

10. An optical system as defined in Claim 8 wherein the section of the canted ring lens is plano-convex.

11. An optical system as defined in Claim 8 wherein the canted ring lens is double convex in section.

12. An optical system as defined in Claim 8 wherein the canted ring lens is Fresnel in section.

13. An optical system as defined in Claim 9 wherein the section of the canted ring lens is plano-convex.

14. An optical system as defined in Claim 9 wherein the canted ring lens is double convex in section.

15. An optical system as defined in Claim 9 wherein the canted ring lens is Fresnel in section.